WHAT IS CLAIMED IS:

1. A display device, comprising a substratum and all-metal electronics formed on a surface of the substratum and operable to control operation of a plurality of basic visible elements associated with the substratum.

2. The display device of claim 1 wherein the substratum comprises one of glass, plastic, metal, silicon, silicon nitride, silicon oxide, or polyimide.

3. The display device of claim 1 wherein the substratum is part of a rigid assembly, a foldable assembly, or a flexible assembly.

4. The display device of claim 1 wherein the display device is one of transmissive, reflective or emissive.

5. The display device of claim 1 wherein an image generated by the display device is one of directly viewed or projected.

6. The display device of claim 1 wherein each of the plurality basic visible elements comprises a pixel, and each pixel comprises a plurality of subpixels.

7. The display device of claim 6 wherein the all-metal electronics are operable to control operation of each of the subpixels independently.

8. The display device of claim 1 wherein the all-metal electronics comprise a plurality of transpinnors, each transpinnor comprising a network of multi-layer thin-film elements, at least one thin-film element in the transpinnor exhibiting giant magnetoresistance, the transpinnor further comprising a conductor magnetically coupled to the at least one thin-film element for controlling operation of the transpinnor, wherein the transpinnor is operable to generate an output signal which is a function of a resistive imbalance among the thin-film elements and which is substantially proportional to a power current in the network of thin-film elements.

9. The display device of claim 8 wherein the plurality of transpinnors includes first transpinnors configured as switches, at least one of the first transpinnors being associated with each of the basic visible elements and being operable to control operation of the associated basic visible element.

10. The display device of claim 9 wherein the plurality of transpinnors includes second transpinnors configured as digital-to-analog converters (DACs), at least one of the DACs being associated with each of the basic visible elements and being operable to provide a control signal to the at least one first transpinnor corresponding to the associated basic visible element.

11. The display device of claim 10 further comprising a plurality of blocks of all-metal memory, at least one of the blocks of memory being associated with each of the basic visible elements and being operable to store image data for use by the at least one DAC corresponding to the associated basic visible element.

12. The display device of claim 11 wherein each basic visible element comprises a pixel comprising a first number of subpixels, and wherein the at least one first transpinnor comprises the first number of first transpinnors, the at least one DAC comprises the first number of DACs, and the at least one block of memory comprises the first number of blocks of memory, each subpixel corresponding to and being controlled by one of the first transpinnors, one of the DACs, and one of the blocks of memory.

13. The display device of claim 12 wherein each of the memory blocks is operable to store a plurality of bits of the image data.

14. The display device of claim 11 wherein the plurality of blocks of memory comprises frame memory and the image data comprise frame data.

15. The display device of claim 11 wherein the first transpinnors, the DACs, and the memory blocks are arranged in a plurality of stacked levels of the all-metal electronics.

16. The display device of claim 11 wherein the at least one first transpinnor, the at least one DAC, and the at least one memory block associated with each basic visible element are disposed in multiple layers of all-metal circuitry and comprise one of a plurality of interchangeable circuit modules.

17. The display device of claim 1 wherein the all-metal electronics comprise control switches for directly controlling operation of the basic visible elements, digital-to-analog converters (DACs) for converting image data to control the control switches, frame

memory for storing the image data, and selection circuitry for enabling individual ones of the basic visible elements.

18. The display device of claim 17 wherein the all-metal electronics further comprise system memory for a computing system associated with the display device.

19. The display device of claim 18 wherein the system memory comprises graphics memory, main memory, and mass storage memory.

20. The display device of claim 18 wherein the all-metal electronics further comprises processing circuitry for carrying out processing functions of the computing system.

21. The display device of claim 20 wherein the processing circuitry comprises a memory controller, a graphics controller, and a central processing unit.

22. The display device of claim 17 wherein the frame memory comprises a plurality of memory cells, each memory cell comprising a multi-layer structure exhibiting magnetoresistance.

23. The display device of claim 22 wherein each multi-layer structure comprises:

a plurality of magnetic layers, at least one of the magnetic layers being for magnetically storing one bit of information; and

a plurality of the access lines integrated with the plurality of magnetic layers and configured such that the bit of information may be accessed using selected ones of the plurality of access lines and the giant magnetoresistive effect;

wherein the magnetic layers are part of a substantially closed flux structure.

24. The display device of claim 22 wherein the plurality of memory cells are arranged in a plurality of substantially identical and interchangeable memory array modules.

25. The display device of claim 24 wherein each memory array module further comprises all-metal support electronics for controlling access to the corresponding memory array module.

26. The display device of claim 24 wherein the memory array modules are arranged in two dimensions and stacked in a third dimension.

27. The display device of claim 1 wherein the all-metal electronics comprise a computer.

28. A liquid crystal display (LCD) device, comprising:

a display panel having a front substrate, a back substrate, a layer of liquid crystals between the front and back substrates, and an electrode layer for applying electric fields to the layer of liquid crystals, the liquid crystals and the electrode layer defining a plurality of basic visible elements;

all-metal electronics formed on the back substrate of the display panel, the all metal-electronics comprising control switches for directly controlling operation of the basic visible

elements, digital-to-analog converters (DACs) for converting image data to control the control switches, frame memory for storing the image data, and selection circuitry for enabling individual ones of the basic visible elements.

29. The LCD device of claim 28 wherein the control switches and the DACs are implemented with transpinnors, each transpinnor comprising a network of multi-layer thin-film elements, at least one thin-film element in the transpinnor exhibiting giant magnetoresistance, the transpinnor further comprising a conductor magnetically coupled to the at least one thin-film element for controlling operation of the transpinnor, wherein the transpinnor is operable to generate an output signal which is a function of a resistive imbalance among the thin-film elements and which is substantially proportional to a power current in the network of thin-film elements.

30. The LCD device of claim 29 wherein the frame memory comprises a plurality of blocks of all-metal memory, at least one of the blocks of memory being associated with each of the basic visible elements and being operable to store the image data therefor.

31. The LCD device of claim 30 wherein each basic visible element comprises a pixel having a plurality of subpixels, each subpixel corresponding to and being controlled by one of the control switches, one of the DACs, and one of the blocks of memory.

32. The LCD device of claim 31 wherein each of the memory blocks is operable to store at least one bit of the image data.

33. The LCD device of claim 30 wherein the control switches, the DACs, and the memory blocks are arranged in a plurality of stacked levels of the all-metal electronics.

34. The LCD device of claim 33 wherein the control switches, the DACs, and the memory blocks associated with each basic visible element comprises one of a plurality of interchangeable circuit modules.

35. The LCD device of claim 28 wherein the frame memory comprises a plurality of memory cells, each memory cell comprising a multi-layer structure exhibiting magnetoresistance.

36. The LCD device of claim 35 wherein each multi-layer structure comprises:

a plurality of magnetic layers, at least one of the magnetic layers being for magnetically storing one bit of information; and

a plurality of the access lines integrated with the plurality of magnetic layers and configured such that the bit of information may be accessed using selected ones of the plurality of access lines and the giant magnetoresistive effect;

wherein the magnetic layers are part of a substantially closed flux structure.

37. The LCD device of claim 28 wherein the selection circuitry comprises a plurality of transpinnors, each transpinnor comprising a network of multi-layer thin-film elements, at least one thin-film element in the transpinnor exhibiting giant magnetoresistance, the transpinnor further comprising a conductor magnetically coupled to the at least one thin-film element for controlling operation of the transpinnor, wherein the transpinnor is operable to generate an output signal which is a function of a resistive

imbalance among the thin-film elements and which is substantially proportional to a power current in the network of thin-film elements.

38. The LCD device of claim 37 wherein first ones of the transpinnors are configured as drivers, and second ones of the transpinnors are configured as logic gates which are operable as selection logic.

39. A light-emitting diode (LED) display device, comprising:

a display panel having a substrate and a plurality of LEDs on the substrate defining a plurality of basic visible elements; and

all-metal electronics formed on the substrate of the display panel, the all metal-electronics comprising control switches for directly controlling operation of the basic visible elements, digital-to-analog converters (DACs) for converting image data to control the control switches, frame memory for storing the image data, and selection circuitry for enabling individual ones of the basic visible elements.

40. The LED display device of claim 39 wherein the control switches and the DACs are implemented with transpinnors, each transpinnor comprising a network of multi-layer thin-film elements, at least one thin-film element in the transpinnor exhibiting giant magnetoresistance, the transpinnor further comprising a conductor magnetically coupled to the at least one thin-film element for controlling operation of the transpinnor, wherein the transpinnor is operable to generate an output signal which is a function of a resistive imbalance among the thin-film elements and which is substantially proportional to a power current in the network of thin-film elements.

41. The LED display device of claim 40 wherein the frame memory comprises a plurality of blocks of all-metal memory, at least one of the blocks of memory being associated with each of the basic visible elements and being operable to store the image data therefor.

42. The LED display device of claim 41 wherein each basic visible element comprises a pixel having a plurality of subpixels, each subpixel corresponding to and being controlled by one of the control switches, one of the DACs, and one of the blocks of memory.

43. The LED display device of claim 42 wherein each of the memory blocks is operable to store at least one bit of the image data.

44. The LED display device of claim 41 wherein the control switches, the DACs, and the memory blocks are arranged in a plurality of stacked levels of the all-metal electronics.

45. The LED display device of claim 44 wherein the control switches, the DACs, and the memory blocks associated with each basic visible element comprises one of a plurality of interchangeable circuit modules.

46. The LED display device of claim 39 wherein the frame memory comprises a plurality of memory cells, each memory cell comprising a multi-layer structure exhibiting magnetoresistance.

47. The LED display device of claim 46 wherein each multi-layer structure comprises:

a plurality of magnetic layers, at least one of the magnetic layers being for magnetically storing one bit of information; and

a plurality of the access lines integrated with the plurality of magnetic layers and configured such that the bit of information may be accessed using selected ones of the plurality of access lines and the giant magnetoresistive effect;

wherein the magnetic layers are part of a substantially closed flux structure.

48. The LED display device of claim 39 wherein the selection circuitry comprises a plurality of transpinnors, each transpinnor comprising a network of multi-layer thin-film elements, at least one thin-film element in the transpinnor exhibiting giant magnetoresistance, the transpinnor further comprising a conductor magnetically coupled to the at least one thin-film element for controlling operation of the transpinnor, wherein the transpinnor is operable to generate an output signal which is a function of a resistive imbalance among the thin-film elements and which is substantially proportional to a power current in the network of thin-film elements.

49. The LED display device of claim 48 wherein first ones of the transpinnors are configured as drivers, and second ones of the transpinnors are configured as logic gates which are operable as selection logic.

50. A plasma display device, comprising:

a plasma display panel having a substrate, the display panel defining a plurality of basic visible elements;

all-metal electronics formed on the substrate of the display panel, the all metal-electronics comprising control switches for directly controlling operation of the basic visible elements, digital-to-analog converters (DACs) for converting image data to control the control switches, frame memory for storing the image data, and selection circuitry for enabling individual ones of the basic visible elements.

51. The plasma display device of claim 50 wherein the control switches and the DACs are implemented with transpinnors, each transpinnor comprising a network of multi-layer thin-film elements, at least one thin-film element in the transpinnor exhibiting giant magnetoresistance, the transpinnor further comprising a conductor magnetically coupled to the at least one thin-film element for controlling operation of the transpinnor, wherein the transpinnor is operable to generate an output signal which is a function of a resistive imbalance among the thin-film elements and which is substantially proportional to a power current in the network of thin-film elements.

52. The plasma display device of claim 51 wherein the frame memory comprises a plurality of blocks of all-metal memory, at least one of the blocks of memory being associated with each of the basic visible elements and being operable to store the image data therefor.

53. The plasma display device of claim 52 wherein each basic visible element comprises a pixel having a plurality of subpixels, each subpixel corresponding to and being controlled by one of the control switches, one of the DACs, and one of the blocks of memory.

54. The plasma display device of claim 53 wherein each of the memory blocks is operable to store at least one bit of the image data.

55. The plasma display device of claim 52 wherein the control switches, the DACs, and the memory blocks are arranged in a plurality of stacked levels of the all-metal electronics.

56. The plasma display device of claim 55 wherein the control switches, the DACs, and the memory blocks associated with each basic visible element comprises one of a plurality of interchangeable circuit modules.

57. The plasma display device of claim 50 wherein the frame memory comprises a plurality of memory cells, each memory cell comprising a multi-layer structure exhibiting magnetoresistance.

58. The plasma display device of claim 57 wherein each multi-layer structure comprises:

a plurality of magnetic layers, at least one of the magnetic layers being for magnetically storing one bit of information; and

a plurality of the access lines integrated with the plurality of magnetic layers and configured such that the bit of information may be accessed using selected ones of the plurality of access lines and the giant magnetoresistive effect;

wherein the magnetic layers are part of a substantially closed flux structure.

59. The plasma display device of claim 50 wherein the selection circuitry comprises a plurality of transpinnors, each transpinnor comprising a network of multi-layer thin-film elements, at least one thin-film element in the transpinnor exhibiting giant magnetoresistance, the transpinnor further comprising a conductor magnetically coupled to the at least one thin-film element for controlling operation of the transpinnor, wherein the transpinnor is operable to generate an output signal which is a function of a resistive imbalance among the thin-film elements and which is substantially proportional to a power current in the network of thin-film elements.

60. The plasma display device of claim 59 wherein first ones of the transpinnors are configured as drivers, and second ones of the transpinnors are configured as logic gates which are operable as selection logic.

61. A computer system, comprising at least one central processing unit, main memory, mass storage memory, a display device, display control electronics, and display memory, wherein the at least one central processing unit, the main memory, the mass storage memory, the display electronics, and the display memory are all implemented as all-metal electronics on a surface of the display device.

62. The computer system of claim 61 wherein the all-metal electronics comprise a plurality of transpinnors, each transpinnor comprising a network of multi-layer thin-film elements, at least one thin-film element in the transpinnor exhibiting giant magnetoresistance, the transpinnor further comprising a conductor magnetically coupled to the at least one thin-film element for controlling operation of the transpinnor, wherein the transpinnor is operable to generate an output signal which is a function of a resistive

imbalance among the thin-film elements and which is substantially proportional to a power current in the network of thin-film elements.

63. The computer system of claim 61 wherein each of the main memory, the mass storage memory, and the display memory comprises a plurality of memory cells, each memory cell comprising a multi-layer structure exhibiting magnetoresistance.

64. The computer system of claim 63 wherein each multi-layer structure comprises:

a plurality of magnetic layers, at least one of the magnetic layers being for magnetically storing one bit of information; and

a plurality of the access lines integrated with the plurality of magnetic layers and configured such that the bit of information may be accessed using selected ones of the plurality of access lines and the giant magnetoresistive effect;

wherein the magnetic layers are part of substantially closed flux structure.